

CLAIMS**What is claimed:**

1. A medical pad, comprising:

5 a fluid containing layer for containing a thermal exchange fluid circulated therethrough, wherein said medical pad is operable for thermal exchange with a patient through a first side of said fluid containing layer; and,

an external electrode interconnected to said fluid containing layer on said first side thereof.

2. A medical pad as recited in Claim 1, further comprising:

10 an electrical connector electrically connected to said external electrode and extending through said fluid containing layer to a second side thereof.

3. A medical pad as recited in Claim 2, said electrical connector comprising:

a port for electrical interconnection to a signal cable.

4. A medical pad as recited in Claim 2, wherein said electrical connector

15 extends through said second side of said fluid containing layer at an exit location within a predetermined area having open-access when said medical pad is positioned on a patient in a predetermined manner.

5. A medical pad as recited in Claim 4, wherein said external electrode is provided so that a portion thereof is disposed in opposing relation to said exit location.

20 6. A medical pad as recited in Claims 2, further comprising:

an insulator surrounding said electrical connector through said fluid containing layer.

7. A medical pad as recited in Claim 1, wherein said electrode is one of a group consisting of:

25 an electrosurgical return electrode;

a defibrillation electrode;
an electrocardiogram electrode; and,
a pacing electrode.

8. A medical pad as recited in Claim 1, further comprising:

5 a plurality of different electrodes interconnected to said fluid circulation layer on said first side thereof at locations selected in relation to corresponding functions thereof.

9. A medical pad as recited in Claim 1, further comprising:

an adhesive surface, extending over at least a portion of said first side of said fluid circulation layer, for contacting a patient.

10 10. A medical pad as recited in Claim 9, wherein said adhesive surface substantially covers said external electrode.

11. A medical pad as recited in Claim 9, further comprising:

15 a conformable layer disposed on said first side of said fluid containing layer, said conformable layer being thermally and electrically conductive, and said conformable layer defining said adhesive surface.

12. A medical pad as recited in Claim 11, a conformable layer comprising:

a first material suspended in a matrix defined by a second material.

13. A medical pad as recited in Claim 12, wherein said first material comprises a liquid and said second material comprises a polymer.

20 14. A medical as recited in Claim 13, wherein said liquid further comprises an electrolyte.

15. A medical pad as recited in Claim 11, wherein said conformable layer comprises a hydrogel material.

16. A medical pad as recited in Claim 11, wherein said external electrode is 25 located between said conformable layer and said fluid circulation layer.

17. A medical pad as recited in Claim 16, wherein said electrode is of a plate-like configuration.

18. A medical pad as recited in Claim 16, wherein said conformable layer covers, surrounds and extends laterally away from said external electrode.

19. A medical pad comprising:

a fluid containing layer for containing a thermal exchange fluid circulated therethrough, wherein said medical pad is operable for thermal exchange with a patient through a first side of said fluid containing layer;

5 a conformable layer disposed on said first side of said fluid containing layer, said conformable layer being thermally and electrically conductive and having an adhesive surface for engaging a patient; and,

an external electrode, captured between said fluid containing layer and said conformable layer, for receiving electrical energy from a patient through said
10 conformable layer.

20. A medical pad as recited in Claim 19, wherein said conformable layer covers, surrounds and extends laterally away from said external electrode.

21. A medical pad as recited in Claim 20, wherein said external electrode is one of a group consisting of:

15 an electrosurgical return electrode;
a defibrillation electrode;
an electrocardiogram electrode; and,
a pacing electrode.

22. A medical pad as recited in Claim 21, wherein said conformable layer
20 comprises a hydrogel material.

23. A medical pad as recited in Claim 22, wherein said hydrogel material includes an electrolyte.

24. A medical pad as recited in Claim 23, wherein said electrolyte is selected from a group consisting of:

25 magnesium chloride;
sodium chloride;

ammonium acetate;
magnesium acetate; and,
magnesium sulfate.

25. A medical pad as recited in Claim 19, further comprising:

5 an electrical connector electrically connected to said external electrode and extending through said fluid containing layer to an exposed second side thereof; and,
an insulator surrounding said electrical connector through said fluid containing layer.

26. A medical pad as recited in Claim 25, said electrical connector

10 comprising:
a port for electrical connection to a signal cable.

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